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Grabowski et al.(10) **Pub. No.: US 2010/0162683 A1**(43) **Pub. Date: Jul. 1, 2010**(54) **TURBOFAN ENGINE****Publication Classification**(76) Inventors: **Zbigniew M. Grabowski**,
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McVey, North Granby, CT (US)(51) **Int. Cl.**
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F02K 1/06 (2006.01)
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A turbofan engine is provided that includes a fan nacelle surrounding a core nacelle. The core nacelle houses a spool. The fan and core nacelles provide a bypass flow path having a nozzle exit area. A turbofan is arranged within the fan nacelle upstream from the core nacelle. A flow control device is adapted to effectively change the nozzle exit area to obtain a desired operating condition for the turbofan engine. A gear train couples the spool and turbofan for reducing a turbofan rotational speed relative to a spool rotational speed. A controller is programmed to respond to at least one sensor. The controller is programmed to effectively control the nozzle area.

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